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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SONG, SARAH U

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,905

Applicant(s)

LEE ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-32, 43 and 44 is/are allowed.
- 6) ☒ Claim(s) 1-3, 33-42, 45 and 46 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0502.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Ben Healy

DETAILED ACTION

Information Disclosure Statement

1. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on May 24, 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

Drawings

2. This application has been filed with nine (9) sheets of drawings, which have been approved by the Examiner.

Specification

3. The disclosure is objected to because of the following informalities: in line 2 of Paragraph [0048], change "discreet" to ~~discrete~~.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 2 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (U.S. Patent 5,781,268).** Liu et al. discloses a method comprising receiving an optical signal in an optical filter; and routing the optical signal through the optical filter multiple times, wherein a signal strength of the optical signal reduces with each pass through the optical filter. The optical filter additionally comprises two reflectors 15 and 17, each reflector having a

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reflectivity of less than one hundred percent, the two or more reflectors aligned to route the optical signal to circulate between the two reflectors. See column 4 lines 15-20.

6. **Claims 1, 3, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Trutna, Jr. et al. (U.S. Patent 5,263,037).** Trutna et al. discloses an apparatus comprising means (e.g. birefringent crystal) for receiving an optical signal in an optical filter; and means (mirrors) for routing the optical signal through the optical filter multiple times, wherein a signal strength of the optical signal reduces with each pass through the optical filter (inherent due to insertion losses). The optical filter comprises an acousto-optical tunable bandpass filter (column 10, lines 46-47). Likewise, Trutna et al. also inherently discloses a method comprising receiving an optical signal in an optical filter; and routing the optical signal through the optical filter multiple times, wherein a signal strength of the optical signal reduces with each pass through the optical filter.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 33-40, 45 and 46 rejected under 35 U.S.C. 103(a) as being unpatentable over Sartorius (U.S. Patent 6,151,427) in view of Kim et al. (U.S. Patent 6,266,462).** Sartorius discloses an apparatus comprising means for receiving an optical signal in an optical waveguide 41 having a core, a cladding (column 5, lines 21-26), and a first interaction region to allow coupling between optical modes in the optical waveguide; and means (an acoustic wave exciter

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43,44) for generating a set of acoustic waves affixed to the first interaction region; the means for generating a set of acoustic waves at N number of frequencies which corresponds to N number of optical wavelengths (column 4, lines 17-20), the set of acoustic waves to cause the optical signal to couple from a first mode to a second mode, and means 45, 51 for shaping the transmission spectrum. Sartorius does not specifically disclose amplitudes of the acoustic waves that correlate to a reduction of optical power in the wavelengths. Kim et al. discloses that the transmittance of an optical signal of a particular wavelength is a function of the amplitude of the acoustic waves (column 12, lines 13-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the amplitudes of the set of acoustic waves to shape the transmission spectrum of the optical signals, since it was known in the art as shown by Kim et al. that the transmittance of an optical signal is a function of the amplitude of the applied acoustic wave. Thus the method of claims 33 and 34 would have been obvious for the same reason.

9. Regarding claims 35, Kim et al. discloses synchronizing transmitting the set of waves to shape the transmission spectrum (column 13, lines 14-20).

10. Regarding claim 36, Sartorius does not explicitly teach that the acoustic wave exciter sweeps a bandpass of wavelengths across a wavelength spectrum. It is noted that the acoustic wave exciter of Sartorius is tunable, and therefore, inherently comprises the ability to so perform. Furthermore, as noted above, Kim discloses that the transmission spectrum can be shaped by applying a set of acoustic waves, and therefore, one of ordinary skill in the art would have found it obvious at the time of the invention to sweep a bandpass of wavelengths to shape the entirety of the spectrum.

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11. Regarding claims 37 and 38, Sartorius discloses a second acoustic wave exciter 49,50 cascaded in series along the waveguide with the first acoustic wave exciter 43,44 and affixed to a second interaction region.

12. Regarding claim 39, neither Sartorius nor Kim et al. explicitly discloses polarization dependence of less than two tenths of a decibel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to minimize the polarization dependence, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

13. Regarding claim 40, Sartorius discloses control components 45 and 51, but does not explicitly disclose the control component to synchronize the generation of signals. It would have been additionally obvious to synchronize the generation of the responses in view of Kim et al. to shape the transmission spectrum in its entirety. See Paragraph 9 above.

Allowable Subject Matter

14. Claims 4-32, 43 and 44 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: Sartorius (U.S. Patent 6,151,427) disclose acousto-optic bandpass filters comprising an optical waveguide having a core, cladding and interaction region; an acoustic wave exciter affixed to the interaction region; a light absorbing material 47. However, Sartorius does not disclose or suggest two or more reflectors aligned to facilitate multiple passes of a band of wavelengths within an optical signal through the interaction regions or means for routing the optical signal through the acoustic wave multiple times. Sartorius discloses a method of transmitting an acoustic wave at a first frequency that corresponds to a first optical wavelength; the acoustic

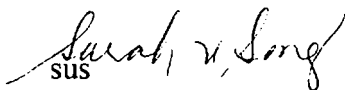
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wave causing a band of wavelengths within the optical signal to couple from a first mode to a second mode in an optical waveguide; absorbing the energy of the optical signal in the first mode; exposing the band of wavelengths in the second mode to a second acoustic wave to cause the optical signal to couple from the second mode to the first mode. Sartorius does not disclose or suggest the method comprising routing the band of wavelengths through the acoustic wave multiple times.

Conclusion

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.


sus


Ben Healy
Examiner